

REMARKS

Claims 1, 3-29, 31-42, and 45-59 are pending in the application. Claims 1, 25, 29, 39, 42, and 55 are currently amended. Claims 2, 30, 43 and 44 are cancelled. Applicants respectfully request for allowance of all pending claims based on following discussions.

Claim Objections under 35 USC § 112

Claims 25, 39, and 40 are rejected for lacking sufficient antecedent basis. In response to the rejections, claims 25 and 39 have been amended to depend on 24 and 37, respectively. Accordingly, Applicants respectfully request that the rejections to claims 25, 39, and 40 under 35 USC § 112 be withdrawn.

Rejections under 35 USC § 102/103

Claims 55-59

Claims 55-58 are rejected under 35 USC § 102(b) as being anticipated by EP Patent Application Publication No. 0,959,253 to Stones (hereinafter referred to as “Stones”). Claim 59 is rejected under 35 USC § 103(a) as being unpatentable over Stones as applied to claims 55-58 above.

Independent claim 55, as amended, is directed to an impeller for a vacuum pump, the impeller having integral therewith a rotor element of a turbomolecular pumping stage, a plurality of rotor elements of a regenerative pumping mechanism, and a rotor for receiving a rotor element of a molecular drag pumping mechanism in a manner that the rotor element of the molecular drag pumping mechanism is a piece of material mounted

to a separate piece of material forming the rotor element of the turbomolecular pumping stage and the rotor elements of the regenerative pumping mechanism.

Stones does not teach, suggest or imply the claim limitation “*the rotor element of the molecular drag pumping mechanism is a piece of material mounted to a separate piece of material forming the rotor element of the turbomolecular pumping stage and the rotor elements of the regenerative pumping mechanism.*” As shown in FIG. 3 of the present application, the rotor elements of turbomolecular pumping stage (107a and 109a) and the rotor elements of regenerative pumping mechanism (122) are a single, integral piece of material, whereas the rotor element of molecular drag pumping mechanism (116) is a separate piece of material mounted to it.

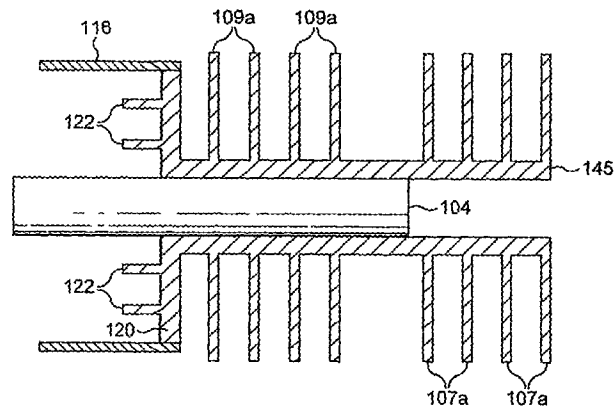


FIG. 3

In Stones, the rotor elements of drag pumping sections and the rotor elements of regenerative pumping section are a single, integral piece of material (9), as shown in FIG. 3 below. This differs from the claimed invention.

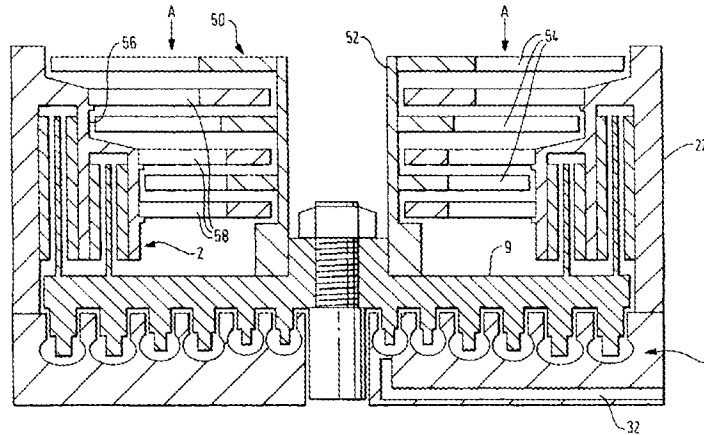


FIG. 3

As such, since Stones fails to teach each and every element of claim 55, it cannot anticipate the same under 35 USC § 102(b). Accordingly, claims 56-59 depend from claim 55 and include all limitations recited therein are patentable over Stones under 35 USC § 102(b).

Claims 1-11, 13-17, 25, 26, 29-38, and 42-52

Claims 1-11, 13-17, 25, 26, 29-38, and 42-52 are rejected under 35 USC § 103(a) as being unpatentable over Stones in view of US Patent No.5,020,969 to Mase et al. (hereinafter referred to as “Mase”).

Independent claim 1 is directed to a vacuum pump comprising a molecular drag pumping mechanism and, downstream therefrom, a regenerative pumping mechanism, wherein a rotor element of the molecular drag pumping mechanism surrounds rotor elements of the regenerative pumping mechanism, wherein the rotor element of the molecular drag pumping mechanism comprises a cylinder mounted for rotary movement with the rotor elements of the regenerative pumping mechanism.

Stones does not teach, suggest or imply the claim limitation “*the rotor element of the molecular drag pumping mechanism comprises a cylinder mounted for rotary movement with the rotor elements of the regenerative pumping mechanism.*” As discussed above, in Stones, the rotor elements of drag pumping section and the rotor elements of regenerative pumping section are a single piece of material, instead of two separate pieces one being mounted to the other.

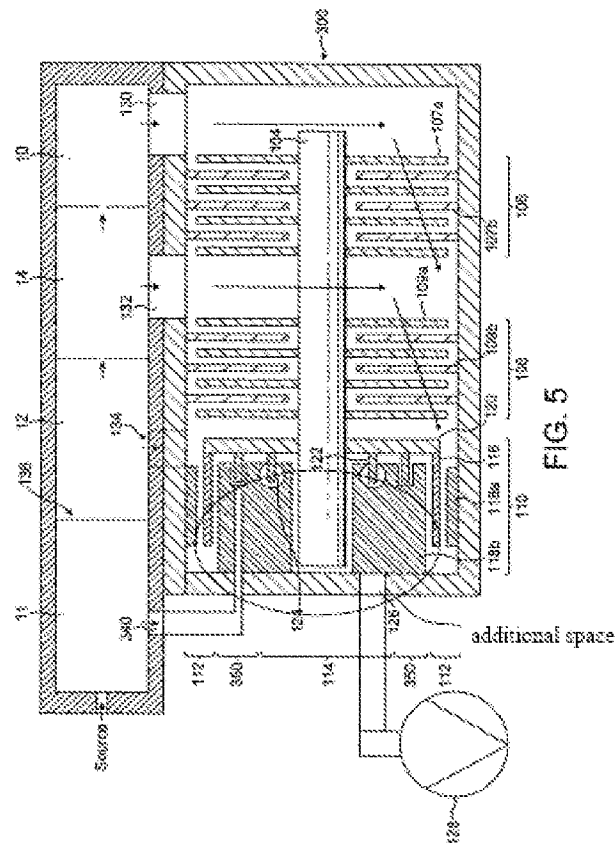
Neither does Mase teach, suggest, or imply the claim limitation. As shown in FIG. 11 of Mase, the rotor elements of drag pumping section (51A) and the rotor elements of regenerative pumping section (55A) are a single, integral piece of material.

It would not have been obvious for a person skilled in the art to modify Mase by separating the rotor elements of drag pumping section (51A) and the rotor elements of regenerative pumping section (55A) into two pieces. Mase criticizes on a two-piece conventional design, and seeks to replace it with a single-piece, integrally-molded rotor. *See, the abstract, and col. 1 lines 9-29.* Separating the rotor elements of drag pumping section (51A) and the rotor elements of regenerative pumping section (55A) into two pieces would defeat the purpose of Mase.

Examiner asserts that it would have been obvious for a person skilled in the art to modify Stones by locating the rotor elements of drag pumping section and the rotor elements of regenerative pumping section on the same side in the manner taught by Mase. *See, page 5 of the Office Action.* Applicants respectfully disagree.

It is an aim of Stones to provide a compound vacuum pump that makes very efficient use of space when mounting various pump sections together. *See, paragraph [0004].* It proposes to locate the rotor elements of drag pumping section on an opposite

side to the rotor elements of regenerative pumping section in order to increase the efficiency of space usage. *See, FIG. 3.* If it were to locate them on the same side, the arrangement would have been much less compact. For example as illustrated in FIG. 5 of the present application, putting the rotor elements of drag pumping section and the rotor elements of regenerative pumping section on the same side would require additional space, which is against the objective of Stones.



It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). Since Stones teaches away from Mase, at least in the sense of arranging the rotor elements of drag pumping section and the rotor elements of regenerative pumping section on the same side, it is

improper to combine them together in rejecting the claimed invention. As such, claim 1 is patentable over Stones in view of Mase under 35 USC § 103(a).

Independent claims 29 and 42 both include claim limitations such as “the rotor element of the molecular drag pumping mechanism surrounds the rotor elements of the regenerative pumping mechanism” and “the rotor element of the molecular drag pumping mechanism comprises a cylinder mounted for rotary movement with the rotor elements of the regenerative pumping mechanism.” For the reasons discussed above, claims 29 and 42 are also patentable over Stones in view of Mase under 35 USC § 103(a).

Accordingly, claims 3-11, 13-17, 25, 26, 31-38, and 45-52 that depend from claims 1, 29 or 42, and include all limitations recited therein are also patentable over Stones in view of Mase under 35 USC § 103(a). Claims 2, 30, 43, and 44 are now cancelled.

Claims 12, 53, and 54

Claims 12, 53, and 54 are rejected under 35 USC § 103(a) as being unpatentable over Stones in view of Mase and US Patent No. 5,695,316 to Schutz et al. (hereinafter referred to as “Schutz”).

Claims 12, 53 and 54 depend from independent claims 1 and 42, which Applicants believe are patentable based on the reasons set forth above. Thus, claims 12, 53, and 54 that include all limitations recited in claims 1 or 42 are also patentable over Stones in view of Mase and Schutz under 35 USC § 103(a).

Claims 18-24, 27, 28, and 39-41

Claims 18-24, 27, 28, and 39-41 are rejected under 35 USC § 103(a) as being unpatentable over Stones in view of Mase and US Patent No. 5,733,104 to Conrad et al. (hereinafter referred to as “Conrad”).

Claims 18-24, 27, 28, and 39-41 depend from independent claims 1 and 29, which Applicants believe are patentable based on the reasons set forth above. Thus, claims 18-24, 27, 28, and 39-41 that include all limitations recited in claims 1 or 29 are also patentable over Stones in view of Mase and Conrad under 35 USC § 103(a).

CONCLUSION

Applicants have made an earnest attempt to place this application in an allowable form. In view of the foregoing remarks, it is respectfully submitted that the pending claims are drawn to a novel subject matter, patentably distinguishable over the prior art of record. Examiner is therefore, respectfully requested to reconsider and withdraw the outstanding rejections.

Should Examiner deem that any further clarification is desirable, Examiner is invited to telephone the undersigned at the below listed telephone number.

Applicants do not believe that any additional fee is due, but as a precaution, the Commissioner is hereby authorized to charge any additional fee to deposit account number 50-4244.

Respectfully submitted,

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